CALIFORNIA DIVISION OF MINES AND GEOLOGY

FAULT EVALUATION REPORT FER-25

DECEMBER 27, 1976

1. Name of fault: Mount Pinos fault and related faults.

2. Location of faults: Cuddy Valley and Frazier Mountain 7.5' quadrangles, Ventura County.

3. Reason for evaluation: Part of a 10-year program; zoned in the Ventura County Seismic and Safety Element (Nichols, 1974).

4. List of references:

a) Carman, M.F., Jr., 1964, Geology of the Lockwood Valley area: California Division of Mines and Geology Special Report 81, 62 p., 4 pl. (scale 1" = 875').

b) Crowell, J.C., 1968, Movement histories of faults in the Transverse Ranges and speculations on the tectonic history of California in Proceedings of Conference on geologic problems of San Andreas Fault System, Dickinson, W.R., and Grantz, A., eds.: Stanford University Publications, Geological Sciences, vol. XI, pp. 323-341.

c) Hartman, D.C., 1957, Geology of the upper Wagon Road Canyon area, southern California: University of California, Los Angeles, unpublished M.A. thesis, 95 p., map scale 1:15,840.

d) Jennings, C.W., 1975, Fault map of California with locations of volcanoes, thermal springs, and thermal wells: California Division of Mines and Geology, California Geologic Data Map Series, Map No. 1, scale 1:750,000.

e) Jennings, C.W. and Strand, R.G., 1969, Geologic map of California, Los Angeles sheet: California Division of Mines and Geology, scale 1:250,000.

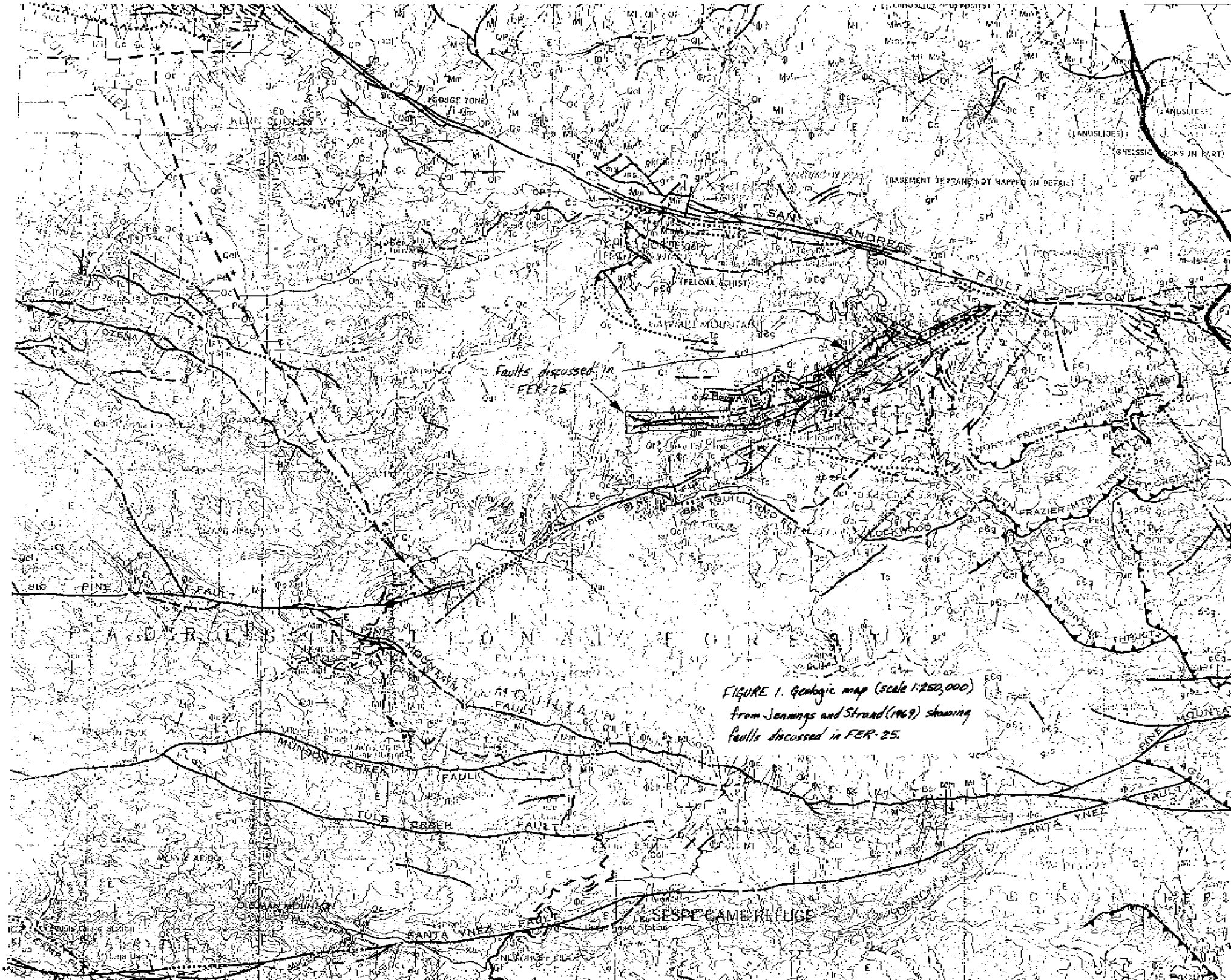

FIGURE 1. Geologic map (scale 1:250,000) from Jennings and Strand (1969) showing faults discussed in FER-25.

f) Nichols, D.R., Oct., 1974, Surface Faulting in General Discussion in Seismic and Safety Elements of the Resources Plan and Program, Ventura County Planning Department, section II, p. 1-35, pl. 1.

g) Weber, F.H. Jr., Kiessling, E.W., Sprotte, E.C., Johnson, J.A. Sherburne, R.W., and Cleveland, G.B., 1975 (Preliminary draft of 2/27/76), Seismic hazards study of Ventura County, California: California Division of Mines and Geology, Open File Report 76-5 LA, 396 p., 9 plates, map scale 1:48,000.

5. Summary of available data:

The Mount Pinos fault and related faults (see fig. 1) are classified as secondary fault hazards in the Ventura County Seismic and Safety Elements (Nichols, 1974). Essentially all faults shown by Jennings and Strand (1969) were zoned in the Element. Apparently Nichols did not attempt to determine whether these faults were active, potentially active, or inactive in the Element.

Hartman (1957, p. 70) states "The Mount Pinos fault has not had movement recently, as shown by uninterrupted superposed Pleistocene terraces." "He notes that the youngest unit cut is Quatal Formation (Miocene);" And that (p. 86) "Primary fault features are absent in this area, but good examples of fault-line scarps are exhibited along the Mount Pinos" fault.

Carmen (1964, p. 52-53) notes that the Mount Pinos fault trace is "a dissected fault-line scarp" which is "the result of juxtaposition of crystalline and sedimentary rocks cross the steeply south-dipping" fault. Carmen believed the fault to be a

normal fault, but could not be certain because the bedding closely paralleled the fault plane. Carmen suggested that the Mount Pinos fault may have had strike-slip movement, yielding the apparent large vertical component of slip. However, for the total slip along the Mount Pinos fault to have been strike-slip, the net slip would need be much greater than the vertical component. Undoubtedly, Carmen was just trying to cover all possibilities- he simply did not know the sense of movement that had occurred along the fault. He was able to conclude that the Mount Pinos fault pre-dates several other faults which offset the Mount Pinos fault and which are themselves terminated against the Big Spring fault. Carmen depicts all these faults including the Big Spring fault as not cutting Pliocene and Holocene terrace deposits.

Crowell (1968, fig. 3) notes that a fault which he calls the "South Mt. Pinos" fault, which may be part of the Mount Pinos fault, moved only during the Miocene. On page 324 he states that Plio-Pleistocene units are not cut by his "South Mount Pinos" fault.

Weber, et al (1975, p. 178) did not determine the probable age of latest movement along the Mount Pinos fault. They include the Big Spring fault as a part of the Big Pine Zone. On plate 6 of their report, the Mount Pinos fault, and all the cross-faults which offset the Mount Pinos fault, are mapped as not cutting Pleistocene terrace deposits. The Big Spring fault is mapped as late Quaternary (?) in age. (While the age of the Big Spring may have some bearing on the age of the other faults discussed herein, it will be discussed in more detail in a later FER as a part of the Big Pine fault).

Jennings (1975) depicts the Mount Pinos fault, the Big Spring fault, and all cross faults as pre-Quaternary in age.

6. Interpretation of air photos:

U.S. Department of Agriculture aerial photographs flight AXI 9K, numbers 60 through 66 were viewed stereoscopically. I was not able to detect any features on either the Mount Pinos fault, or on any of the cross faults, that would indicate Holocene or Late Quaternary activity.

7. Field observations:

On June 2-3, 1976, I visited several localities along the mapped trace of the Mount Pinos fault and the Little Cuddy Creek fault (see figure 2). I could not find any evidence of faulting of Quaternary units at any of these sites. No topographic features indicative of Holocene or late Quaternary fault activity were noted.

8. Conclusions

The youngest unit cut by the Mount Pinos fault appears to be Quatal Formation (Miocene in age). Neither the Mount Pinos fault, nor any of the cross-faults which offset the Mount Pinos fault cut Pleistocene or Holocene terrace deposits, or even Pliocene deposits. No fault produced topography is evident along any of these faults. Therefore, the Mount Pinos and related faults are most likely pre-late Quaternary in age.

9. Recommendations:

Based on the data summarized herein, the Mount Pinos fault and related cross faults should not be zoned at this time.

10. Investigating geologist; date:

I agree with recommendations.
EHA
1/3/77

Theodore C. Smith

THEODORE C. SMITH
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